Letter to the Editors-in-Chief

Low reproducibility of the diagnosis of subsegmental pulmonary embolism in symptomatic patients

Dear Editors-in-Chief,

Since the introduction of the multi-detector row spiral computed tomography (MDCT) for the approach to patients with clinically symptomatic pulmonary embolism (PE), the diagnosis of subsegmental pulmonary embolism (SSPE) has become quite common [1,2]. While the incidental detection of isolated (that is, not associated with deep vein thrombosis [DVT] in the legs) SSPE in cancer patients is of uncertain interpretation [3], the detection of SSPE in patients who undergo MDCT because of clinical symptoms of PE is generally regarded as an indication for anticoagulant treatment even in the absence of DVT. Indeed, a post-hoc analysis of two cohort studies showed that the outcome of these patients does not differ from that of patients with thrombosis involving segmental or more proximal arteries [4]. However, a few reports have questioned the need for anticoagulant therapy in all such patients [5–7]. In addition, the reproducibility of SSPE diagnosis may be lower than expected [8,9]. Therefore, we decided to assess the inter-observer reproducibility of the diagnosis of SSPE in the hands of two highly experienced thoracic radiologists working at our university Institution.

To this purpose we retrieved the high-definition (64-detector row) MDCT images of 36 consecutive patients who had been diagnosed as having a clinically symptomatic isolated SSPE between 2013 and 2016 from the archives of the University Department of Radiology in Padua. The main characteristics of these patients were identified, and are reported in Table 1. An identical number of images were randomly extracted from those obtained in the same time period in patients investigated for the clinical suspicion of PE and in whom the diagnosis had been excluded. Two thoracic radiologists unaware of the initial diagnosis and selected among the ones with the highest experience in the field reviewed the 72 images independently from each other in a random order. In case of disagreement, the opinion of a third radiologist was obtained. The inter-observer agreement between the two radiologists, as well as the agreement between the final and the initial diagnosis was calculated with the use of the Cohen kappa coefficient.

The level of agreement between the two radiologists was moderate (kappa 0.60; 95% CI: 0.40–0.80), while that between the final and the initial diagnosis was low (kappa 0.37; 95% CI: 0.34–0.40). Indeed, the diagnosis of SSPE was eventually confirmed only in 16 (44.4%) of the 36 patients who had been discharged as having a clinically symptomatic PE, and was eventually shown also in 3 (8.3%) of the 36 patients in whom the diagnosis of PE had been excluded.

In conclusion, the reliability of the diagnosis of symptomatic SSPE is low. Our results are consistent with those obtained by others [8,9], and suggest that, in the absence of lower extremities DVT the decision whether or not to administer anticoagulant treatment should rely on a wide spectrum of elements including also, but not only, the CT findings. If the doubts persist, a supplementary V/Q scan may help achieve a correct diagnosis [10].

Table 1
Main characteristics of the 36 patients of the study cohort.

Age (mean ± SD)	75.8 ± 15.7
Males (n, %)	14 (38.9)
Unprovoked PE (n, %)	14 (38.9)
Cancer (n, %)	12 (33.3)
Previous VTE (n, %)	9 (25.0)
Atrial fibrillation (n, %)	6 (15.4)
Family history of VTE	2 (5.6)

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Raffaele Pesavento[a], Giorgio de Conti[b], Raffaella Motta[a,b],
Davide Ceccato[a], Elisabetta Baro[a], Paolo Prandoni[c,*]
[a] *Department of Medicine, University Hospital of Padua, Italy*
[b] *Department of Radiology, University Hospital of Padua, Italy*
[c] *Arianna Foundation on Anticoagulation, Bologna, Italy*
E-mail address: prandonip@gmail.com (P. Prandoni).

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[*] Corresponding author.